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POSZ & BETHARDS, PLC
11250 ROGER BACON DRIVE
SUITE 10
RESTON, VA 20190

EXAMINER	
WARE, CICELY Q	
ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/685,198	MCCORKLE, JOHN W.	
	Examiner	Art Unit	
	Cicely Ware	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 April 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-77* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12, 14, 15, 22-40,57-77* is/are rejected.

7)☒ Claim(s) *13,16-18 and 41-44* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claims 1, 5, 7-9, 29, 33, 35, 37, 58, 72 and 75 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claim 1, recites "substantially blocked". Substantially is vague and indefinite because it fails to distinctly reference a definite boundary.

b. Claim 5, recites "substantially equal". Substantially is vague and indefinite because it fails to distinctly reference a definite boundary.

c. Claim 7, recites "substantially at least one" and "substantially open circuit". Substantially is vague and indefinite because it fails to distinctly reference a definite boundary.

d. Claim 8, recites "substantially at least one". Substantially is vague and indefinite because it fails to distinctly reference a definite boundary.

e. Claim 9, recites "substantially 50 ohms". Substantially is vague and indefinite because it fails to distinctly reference a definite boundary.

f. Claim 29, recites "substantially blocked". Substantially is vague and indefinite because it fails to distinctly reference a definite boundary.

g. Claim 33, recites "substantially equal". Substantially is vague and indefinite because it fails to distinctly reference a definite boundary.

h. Claim 35, recites "substantially at least one" and "substantially open

circuit". Substantially is vague and indefinite because it fails to distinctly reference a definite boundary.

i. Claim 37, recites "substantially 50 ohms". Substantially is vague and indefinite because it fails to distinctly reference a definite boundary.

j. Claim 58, recites "substantially cancel". Substantially is vague and indefinite because it fails to distinctly reference a definite boundary.

k. Claims 72 and 75, recites "substantially zero ". Substantially is vague and indefinite because it fails to distinctly reference a definite boundary.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 58 and 71 are rejected under 35 U.S.C. 102(a) as being anticipated by Larrick, Jr. et al. (US Patent 6,026,125).

(1) With regard to claim 58, discloses an RFI extraction mechanism in a radio front end of a UWB receiver comprising: means for inverting and time-shifting a first impulse response component and a second impulse component in the radio front end, each of said first impulse response component having a first impulsive shape and the second impulse response component having a second impulsive shape; and means of

adjusting a relative position of said first impulse response component and second impulse response component so as to pass a UWB signal, but substantially cancel a narrowband interfering signal (col. 1, lines 12-19, col. 6, lines 17-20, 47-54, col. 10, lines 39-67, col. 11, lines1-41).

(3) With regard to claim 71, claim 71 inherits all the limitations of claim 58.

4. Claim 66 is rejected under 35 U.S.C. 102(b) as being anticipated by Hartmann (4,577,168).

With regard to claim 66, Hartmann further discloses an adjustable receiver (Table 1), a first transmission line having a predetermined impedance and configured to convey an incoming signal that includes said UWB signal and said narrowband signal (Fig. 29, (50)); a second transmission line having a second impedance and configured to convey a portion of said incoming signal for a predetermined distance and reflect said portion of said incoming signal; and a receiving transmission line having a third impedance configured to receive respective portions of said incoming signal from said first transmission line and a reflected portion of said incoming signal from said second transmission line so as to create an impulse response having a first component that has a shape of a wavelet portion of said UWB signal and a second component that is delayed in time and inverted in at least one of shape and phase relative to multiple cycles of the narrowband interference signal (col. 4, lines 60-64, col. 5, lines 5-15, col. 6, lines 48-68, col. 7, lines 1-19, col. 8, lines 4-9, 18-50, col. 18, lines 50-59).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-3, 29,30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (RFI Suppression for Ultra Wideband Radar) in view of Scarpa (US Patent 5,325,204), and further in view of Phu et al. (An Ultra-Wideband Exciter for Ground-Penetration Radar Systems).

(1) With regard to claim 1, Miller et al. discloses an RFI extraction mechanism for passing a UWB signal while suppressing a narrowband interference signal that overlap said UWB signal in frequency, comprising: a network having an input terminal configured to receive an incoming signal that includes a UWB signal and the narrowband interference signal, an output terminal and a circuit configured to have an impulse response having a first component that has an impulsive shape, and at least one other component delayed in time from said first component and having an impulsive shape (Pg. 1142, col. 2, lines 16-24, 40-42, Pg. 1143, col. 2, lines 50-53, Pg. 1144, col. 2, lines 22-58, Pg. 1145, lines col. 1, lines 1-4, 11-12, 14-18).

However Miller et al. does not disclose wherein energy from said UWB signal is conveyed to the output terminal and energy from said narrowband interference signal is substantially blocked form being output through the output terminal.

However Scarpa discloses wherein energy from said UWB signal is conveyed to the output terminal and energy from said narrowband interference signal is substantially blocked form being output through the output terminal (abstract, col. 2, lines 17-20, 24-29).

Therefore it would have been obvious to one of ordinary skill in the art to modify Miller et al. to incorporate wherein energy from said UWB signal is conveyed to the output terminal and energy from said narrowband interference signal is substantially blocked form being output through the output terminal in order to improve reception of the wideband communication signal by attenuating narrowband signal interference.

However Miller et al. in combination with Scarpa do not disclose wherein first and second widths of the first and second impulsive shapes, respectively, are less than a reference width of a half cycle of a highest frequency of the UWB signal.

However Phu et al. discloses an ultra-wideband exciter wherein first and second widths of the first and second impulsive shapes, respectively, are less than a reference width of a half cycle of a highest frequency of the UWB signal (Pg. 1138, Table 1).

Therefore it would have been obvious to one of ordinary skill in the art to modify the inventions of Miller et al. in combination with Scarpa to incorporate wherein first and second widths of the first and second impulsive shapes, respectively, are less than a reference width of a half cycle of a highest frequency of the UWB signal in order to transmit a linear-frequency modulated waveform with large bandwidth for high-resolution imaging and low-start frequency for efficient propagation (Phu et al., Pg. 1138, col. 1, lines 40-47).

(2) With regard to claim 2, claim 2 inherits all the limitations of claim 1. Scarpa further discloses wherein an amount of delay between the first component and the last on second component is electrically adjustable (col. 5, lines 24-26, col. 6, line 68).

(3) With regard to claim 3, claim 3 inherits all the limitations of claim 1. Scarpa further discloses wherein an amount of delay between the first component and the at least one second component is mechanically adjustable (col. 6, line 68, col. 7, line 68, col. 8, lines 1-4).

(4) With regard to claim 29, claim 29 inherits all the limitations of claim 1. Scarpa further discloses a tracking correlator configured to detect said UWB signal and a controller configured to control operations of the tracking correlator and radio front end (Fig. 3A, col. 3, lines 8-21, col. 7, lines 15-27).

(5) With regard to claim 30, claim 30 inherits all the limitations of claim 29. Scarpa further discloses wherein an amount delay between the first component and the at least one second component is electrically adjustable (col. 5, lines 24-26, col. 6, line 68).

(6) With regard to claim 31, claim 31 inherits all the limitations of claim 30. Scarpa further discloses wherein the amount of delay between the first and the at least one second component is mechanically adjustable (col. 6, line 68, col. 7, line 68, col. 8, lines 1-4).

7. Claims 59-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scarpa (US Patent 5,325,204) in view of Phu et al. (An Ultra-Wideband Exciter for Ground-Penetration Radar Systems).

(1) With regard to claim 59, Scarpa discloses an RFI extraction mechanism for passing a UWB signal while suppressing a narrowband interference signal that coincides with said UWB signal in frequency, comprising: a controller configured to controllably adjust a relative position of a first impulse response component and a second impulse response component of a radio front-end (abstract, col. 2, lines 22-26, 40-41, col. 5, lines 3-26, col. 7, lines 31-45), said controller being configured to adjust an amplifier bias of an amplifier in said radio front-end; a control receiver configured to detect at least one of a signal energy level and a signal to noise ratio of said narrowband interference signal and provide an indication to said controller regarding a characteristic feature of said narrowband interference signal (col. 7, lines 59-68, col. 8, lines 1-21).

However Scarpa does not disclose wherein first and second widths of the first and second impulsive shapes, respectively, are less than a reference width of a half cycle of a highest frequency of the UWB signal.

However Phu et al. discloses an ultra-wideband exciter wherein first and second widths of the first and second impulsive shapes, respectively, are less than a reference width of a half cycle of a highest frequency of the UWB signal (Pg. 1138, Table 1).

Therefore it would have been obvious to one of ordinary skill in the art to modify Scarpa to incorporate wherein first and second widths of the first and second impulsive

shapes, respectively, are less than a reference width of a half cycle of a highest frequency of the UWB signal in order to transmit a linear-frequency modulated waveform with large bandwidth for high-resolution imaging and low-start frequency for efficient propagation (Phu et al., Pg. 1138, col. 1, lines 40-47).

(2) With regard to claim 60, claim 60 inherits all that limitations of claim 59. Scarpa further discloses in (Fig 3B, 100,102) wherein the controller further comprises: a power sensor configured to determine a power level of said narrowband interference signal and inform said controller (Fig. 3A, 35, 37) of said power level.

(3) With regard to claim 61, claim 61 inherits all the limitations of claim 60. Scarpa further discloses in (Fig. 3B, 126,128) wherein the controller further comprises: a memory configured to hold a table of target biases corresponding to frequencies used by said controller when determining the amount of adjustment.

(4) With regard to claim 62, claim 62 inherits all the limitations of claim 59. Scarpa further discloses in (Fig. 3B, 106,116) wherein another amplifier connected to said first amplifier by a switch (Fig. 3B, 130), said controller being configured to adjust a position of said switch to assist in positioning said first impulse response component and said second impulse response component (col. 9, lines 29-59).

8. Claims 4, 5-9, 11, 72-76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (RFI Suppression for Ultra Wideband Radar) in combination with Scarpa (US Patent 5,325,204), in combination with Phu et al. (An Ultra-Wideband Exciter for Ground-Penetration Radar Systems) as applied to claims 1 and 31 above, in further view of Hartmann (US Patent 4,577,168).

(1) With regard to claim 4, claim inherits all the limitations of claim 1. Miller et al. in combination with Scarpa in combination with Phu et al. disclose all the limitations of claim 1 above. Scarpa further discloses said circuit comprising at least one section, connected in series through at least one of an isolation device, a circulator and an amplifier.

However Miller et al. in combination with Scarpa in combination with Phu et al. do not disclose wherein said output terminal of said network is connected to a terminating load of predetermined impedance; a first transmission line having a predetermined characteristic impedance matched to a source impedance of a device that provides the incoming signal and configured to convey said incoming signal; a second transmission line having a second characteristic impedance and configured to convey a portion of said incoming signal from said first transmission line for a predetermined distance and reflect said portion of said incoming signal; and a receiving transmission line having third characteristic impedance matched to said terminating load and configured to receive respective portions of said incoming signal from said first transmission line and a reflected portion of said incoming signal from said second transmission line and having as an output said output terminal.

However Hartmann discloses in output terminal of said network is connected to a terminating load of predetermined impedance, a first transmission line having a predetermined characteristic impedance matched to a source impedance of a device that provides the incoming signal and configured to convey said incoming signal; a second transmission line having a second characteristic impedance and configured to

convey a portion of said incoming signal from said first transmission line for a predetermined distance and reflect said portion of said incoming signal; and a receiving transmission line having third characteristic impedance matched to said terminating load and configured to receive respective portions of said incoming signal from said first transmission line and a reflected portion of said incoming signal from said second transmission line and having as an output said output terminal (col. 4, lines 60-64, col. 5, lines 5-15, col. 6, lines 48-68, col. 7, lines 1-19, col. 8, lines 4-9, 18-50, col. 18, lines 50-59).

Therefore it would have been obvious to one of ordinary skill in the art to modify the inventions of Miller et al. in combination with Scarpa in combination with Phu et al. to incorporate an output terminal of said network connected to a terminating load of predetermined impedance; a first transmission line having a predetermined characteristic impedance matched to a source impedance of a device that provides the incoming signal and configured to convey said incoming signal; a second transmission line having a second characteristic impedance and configured to convey a portion of said incoming signal from said first transmission line for a predetermined distance and reflect said portion of said incoming signal; and a receiving transmission line having third characteristic impedance matched to said terminating load and configured to receive respective portions of said incoming signal from said first transmission line and a reflected portion of said incoming signal from said second transmission line and having as an output said output terminal in order to have a notch filter with broader

rejection characteristics wherein the balance condition in the notch can then be achieved over a broader bandwidth (Hartmann, col. 3, lines 24-28).

(2) With regard to claim 5, claim 5 inherits all the limitations of claim 4. Hartmann further discloses wherein said characteristic impedance of said second transmission line is substantially equal to a parallel combination of said characteristic impedance of said first transmission line and said characteristic impedance of said receiving transmission line (col. 4, lines 10-26, col. 9, lines 54-57, col. 10, lines 25-57).

(3) With regard to claim 6, claim inherits all the limitations of claim 4. Hartmann further discloses in (Fig. 29 and 30B) wherein the second transmission line is connected to the first transmission line and the receiving transmission line at one end thereof and a node held at a predetermined potential at an opposite end.

(4) With regard to claim 7, claim 7 inherits all the limitations of claim 4. Hartmann discloses wherein an electrical length of said second transmission line is substantially at least one of a quarter wavelength and any number of multiples of ½ wavelength of a primary frequency of said narrowband signal, and a reflection in said second transmission line is caused by said second transmission line appearing to said narrowband signal as a substantially open circuit (col. 8, lines 18-26).

(5) With regard to claim 8, claim 8 inherits all the limitations of claim 4. Hartmann further discloses wherein an electrical length of said second transmission line is substantially at least on of a ½ wavelength and any number multiples of ½ wavelength of a primary frequency of said narrowband signal, and a reflection in said second

transmission line is caused by said second transmission line appearing to short circuit at the frequencies of interest (col. 8, lines 18-26).

(6) With regard to claim 9, claim 9 inherits all the limitations of claim 4. Hartmann further discloses wherein the first transmission line having said predetermined impedance of substantially 50 ohms, the receiving transmission line having said third impedance of substantially 50 ohms, and the second transmission line having said second impedance of substantially 25 ohms (col. 10, lines 25-57).

(7) With regard to claim 11, claim 11 inherits all the limitations of claim 1. Hartmann further discloses in (Fig. 29 and 30a) discloses an output terminal of said network is connected to a terminating load of a predetermined impedance; a network includes at least one section, connected in series and each section including, a two-way splitter having said input terminal an input, a first output and a second output, a delay element having an input connected to the first output of said two-way splitter and having an output and a combiner having a first input connected to the output of said delay element, a second input connected to the second output of said two-way splitter and the output terminal as an output.

(8) With regard to claim 72, claim 72 inherits all the limitations of claim 4. Hartmann further discloses wherein a length of at least one of said first transmission line and said receiving transmission line being substantially zero (Fig. 31, col. 9, lines 22-57).

(9) With regard to claim 73, claim 73 inherits all the limitations of claim 4. Hartmann further discloses in (Table 1) wherein respective lengths of said first, second

and receiving transmission lines are independently adjustable in each of the at least one sections so as to allow narrowband signals at multiple frequencies to be suppressed without suppressing the UWB signal by more than a predetermined amount (col.10, lines 19-67).

(10) With regard to claim 74, claim 74 inherits all the limitations of claim 4. Scarpa further discloses wherein said circuit including a plurality of sections, each of said sections configured to suppress energy at a different frequency (Fig. 3A,3B, col. 7, line 68, col. 8, lines 1-2).

(11) With regard to claim 75, claim 75 inherits all the limitations of claims 31 and 72. Hartmann further discloses wherein a length of at least one of said first transmission line and said receiving transmission line being substantially zero (Fig. 31, col. 9, lines 22-57).

(12) With regard to claim 76, claim 76 inherits all the limitations of claims 31 and 73.

9. Claim 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (RFI Suppression for Ultra Wideband Radar) in combination with Scarpa (US Patent 5,325,204), in combination with Phu et al. (An Ultra-Wideband Exciter for Ground-Penetration Radar Systems) in combination with Hartmann (US Patent 4,577,168) as applied to claim 4 above, in further view of Peckham et al. (US Patent 6,215,359).

With regard to claim 10, claim 10 inherits all the limitations of claim 4. Miller et al. in combination with Scarpa in combination with Phu et al. in combination with Hartmann disclose all the limitations of claim 4 above.

However Miller et al. in combination with Scarpa in combination with Phu et al. in combination with Hartmann do not disclose a varactor connected across said second transmission line which adjusts the electrical length of said second transmission line so as to tune the delay and provide an electronically tunable notch operator at the primary frequency of the narrowband signal.

However Peckham et al. discloses in (Fig. 4, (482,446,445)) a varactor connected across said second transmission line, which adjusts the electrical length of said second transmission line so as to tune the delay and provide an electronically tunable notch operator at the primary frequency of the narrowband signal.

Therefore it would have been obvious to one ordinary skill in the art to modify the inventions of Miller et al. in combination with Scarpa in combination with Phu et al. in combination with Hartmann to incorporate a varactor connected across said second transmission line, which adjusts the electrical length of said second transmission line so as to tune the delay and provide an electronically tunable notch operator at the primary frequency of the narrowband signal in order to efficiently amplify and transmit signals at more that one frequency band while suppressing first, second and higher order harmonics.

10. Claims 12, 14, 15, 22, 23-28, 32-40 and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (RFI Suppression for Ultra Wideband Radar) in combination with Scarpa (US Patent 5,325,204), in combination with Phu et al. (An Ultra-Wideband Exciter for Ground-Penetration Radar Systems) in combination with Hartmann (US Patent 4,577,168) as applied to claim 11 above, in further view of Weissman et al. (US Patent 6,501,942).

(1) With regard to claim 12, claim 12 inherits all the limitations of claim 11. Miller et al. in combination with Scarpa in combination with Phu et al. in combination with Hartmann disclose all the limitations of claim 11 above.

However Miller et al. in combination with Scarpa in combination with Phu et al. in combination with Hartmann do not disclose wherein said delay element comprising: a plurality of amplifiers, at least one of said plurality of amplifiers having a bias adjustable delay and a delay bias input connected in series.

However Weissman et al. discloses in (Fig. 3 (128,130,137)) said delay element comprising: a plurality of amplifiers, at least one of said plurality of amplifiers having a bias adjustable delay and a delay bias input connected in series.

Therefore it would have been obvious to one of ordinary skill in the art to modify the inventions of Miller et al. in combination with Scarpa in combination with Phu et al. in combination with Hartmann to incorporate delay element comprising: a plurality of amplifiers, at least one of said plurality of amplifiers having a bias adjustable delay and a delay bias input connected in series so that the level of the amplified signal is maintained at a level consistent with the link budget.

(2) With regard to claim 14, claim 14 inherits all the limitations of claim 12. Weissman et al. further discloses in (Fig. 3) wherein said isolation device includes and amplifier (112,114).

(3) With regard to claim 15, claim 15 inherits all the limitations of claim 12. Weissman et al. further discloses an isolation device is inverting on inverting isolation device (Fig. 3, 114).

(4) With regard to claim 22, claim 22 inherits all the limitations of claim 11. Weissman et al. further discloses said delay element includes a transmission line (Fig. 3, 137).

(5) With regard to claim 23, claim 23 inherits all the limitations of claim 11. It is well known in the art that notch filters are implemented with resistors, inductors and capacitors and can take any form. A shunt notch filter can be used to suppress narrowband interference in an RFI extraction circuit. A shunt notch (Hartmann col. 1, lines 43-62) is one in which a series resonant circuit is in parallel with the desired transmission path. This approach shunts the undesired band to ground. Therefore it is inherent that the said delay element the shunt notch filter would include a series of series L and series of R and shunt C sections (see Hartmann col. 1, lines 43-62).

(6) With regard to claim 24, claim 24 inherits all the limitations of claim 11. It is well known in the art that notch filters are implemented with resistors, inductors and capacitors and can take any form. A shunt notch filter can be used to suppress narrowband interference in an RFI extraction circuit. A shunt notch (Hartmann (US Patent 4,577,168), col. 1, lines 43-62) is one in which a series resonant circuit is in

parallel with the desired transmission path. This approach shunts the undesired band to ground. Therefore it is inherent that the said delay element the shunt notch filter would include a series of series L and series of R and shunt C sections (see Hartmann (US Patent 4,577,168), col. 1, lines 43-62).

(7) With regard to claim 25, claim 25 inherits all the limitations of claim 23. Hartmann however discloses wherein at least one of said shunt C elements is electrically adjustable (see Hartmann (US Patent 4,577,168, Table 1)).

(8) With regard to claim 26, claim 26 inherits all the limitations of claim 23. Examiner suggests that it is well known in the art that a shunt C element can be modeled as a varactor.

(9) With regard to claim 27, claim 27 inherits all the limitations of claim 1. Scarpa further discloses a monitoring mechanism configured to monitor at least one of a composite output level (col. 2, lines 55-59); a controller configured to adjust the amount of delay and determine a predetermined delay that results in the composite output level being a minimum (col. 2, lines 49-54, col. 3, lines 1-22).

(10) With regard to claim 28, claim 28 inherits all the limitations of claim 27. Scarpa further discloses said controller is configured to adjust said amount of delay across a range of delay that corresponds with a bandwidth that controls said UWB signal (col. 5, lines 17-61, col. 7, lines 46-61, col. 8, lines 13-21, 33-43).

(11) With regard to claim 32, claim 32 inherits all the limitations of claims 31 and 4.

(12) With regard to claim 33, claim 33 inherits all the limitations of claims 32 and 5. (13) With regard to claim 34, claim 34 inherits all the limitations of claims 33 and 6.

(14) With regard to claim 35, claim 35 inherits all the limitations of claims 34 and 7.

(15) With regard to claim 36, claim 36 inherits all the limitations of claims 35 and 8.

(16) With regard to claim 37, claim 37 inherits all the limitations of claims 36 and 9. (17) With regard to claim 38, claim 38 inherits all the limitations of claims 37 and 10.

(18) With regard to claim 39, claim 39 inherits all the limitations of claim 38 and 11.

(19) With regard to claim 40, claim 40 inherits all the limitations of claims 39 and 12.

(20) With regard to claim 77, claim 77 inherits all the limitations of claims 34 and 74. Scarpa further discloses wherein said circuit including a plurality of sections, each of said sections configured to suppress energy at a different frequency (Fig. 3A, 3B, col. 7, line 68, col. 8, lines 1-2).

11. Claim 57 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hartmann (US Patent 4,577,168) in view of MacLellan et al. (US Patent 6,185,418).

With regard to claim 57, Hartmann discloses in output terminal of said network is connected to a terminating load of predetermined impedance, a first transmission line having a predetermined characteristic impedance matched to a source impedance of a device that provides the incoming signal and configured to convey said incoming signal; a second transmission line having a second characteristic impedance and configured to convey a portion of said incoming signal from said first transmission line for a predetermined distance and reflect said portion of said incoming signal; and a receiving transmission line having third characteristic impedance matched to said terminating load and configured to receive respective portions of said incoming signal from said first transmission line and a reflected portion of said incoming signal from said second transmission line and having as an output said output terminal (col. 4, lines 60-64, col. 5, lines 5-15, col. 6, lines 48-68, col. 7, lines 1-19, col. 8, lines 4-9, 18-50, col. 18, lines 50-59).

However Hartmann does not disclose a UWB demodulator configured to detect data form a signal output from said RFI extraction mechanism; and a decoder configured to decode said data from said UWB demodulator so as to produce an output data stream.

However MacLellan et al. discloses in (Fig. 1) a communication system which includes a UWB demodulator (106) configured to detect data form a signal output from

said RFI extraction mechanism; and a decoder (107,108) configured to decode said data from said UWB demodulator so as to produce an output data stream.

Therefore it would have been obvious to one of ordinary skill in the art to modify Hartmann to incorporate a system with a UWB demodulator configured to detect data form a signal output from said RFI extraction mechanism; and a decoder configured to decode said data from said UWB demodulator so as to produce an output data stream to more efficiently use the available bandwidth of a time-varying RF channel and/or to provide a flexible and adaptive digital communication system.

12. Claim 63 is rejected under 35 U.S.C. 103(a) as being unpatentable over Casabona et al. (US Patent 5,872,540) in view of MacLellan et al. (US Patent 6,185,418).

With regard to claim 63, Casabona et al. discloses a UWB receiver comprising an RFI extraction circuit comprising a controller configured to controllably adjust a relative position of a first component and a second component of an impulse response function of a radio front-end, said controller being configured to adjust an amplifier bias of an amplifier in said radio front-end, a control receiver configured to detect a signal energy level and a signal to noise ratio of said UWB signal, and a sensor configured to detect an output power of said UWB signal (col. 13, lines 26-48, col. 14, lines 9-24, col. 18, lines 9-15, 26-38, 54-59, col. 21, lines 62-67, col. 22, lines 50-62).

However Casabona et al. does not disclose a bi-phase wavelet demodulator configured to detect data from a signal output from said RFI extraction circuit; and a

decoder configured to decode said data from said bi-phase wavelet demodulator so as to produce an output data stream.

However MacLellan et al. discloses in (Fig. 1) a bi-phase wavelet demodulator (106) configured to detect data from a signal output from said RFI extraction circuit; and a decoder (107,108) configured to decode said data from said bi-phase wavelet demodulator so as to produce an output data stream (col. 3,lines 49-50, col. 4, lines 37-44).

Therefore it would have been obvious to one of ordinary skill in the art to modify Casabona et al. to incorporate a bi-phase wavelet demodulator configured to detect data from a signal output from said RFI extraction circuit; and a decoder configured to decode said data from said bi-phase wavelet demodulator so as to produce an output data stream so as to produce an output data stream to more efficiently use the available bandwidth of a time-varying RF channel and/or to provide a flexible and adaptive digital communication system.

13. Claim 64 is rejected under 35 U.S.C. 103(a) as being unpatentable over Larrick, Jr. et al. (US Patent 6,026,125) in view of Richards et al. (US Patent 6,304,623)

(1) With regard to claim 64, Larrick, Jr. et al. discloses a method for controlling a relative position of a first impulse response component and a second impulse response component of a radio front-end in a UWB receiver, comprising the steps of receiving at said radio a UWB signal corrupted with narrowband interference at a predetermined frequency; and determining a relative position of the first impulse response component

and the second impulse response component to cancel said narrowband interference (col. 1, lines 12-19, col. 6, lines 17-20, 47-54, col. 10, lines 39-67, col. 11, lines1-41).

However Larrick, Jr. et al. does not discloses in determining an amplifier bias of an amplifier in said radio front end to achieve said relative position; accessing a memory table containing a target value for said amplifier bias corresponding to the predetermined frequency; and sending the target value to the amplifier.

However Richards et al. discloses in (Fig. 4 (420, 408), Fig. 13)) determining an amplifier bias of an amplifier in said radio front end to achieve said relative position; accessing a memory table containing a target value for said amplifier bias corresponding to the predetermined frequency; and sending the target value to the amplifier (col. 1, lines 33-38, 66-67, col. 2, lines 1-4, col. 3, lines 52-60, col. 16, lines 29-34, col. 18, lines 9-15, 27-35).

Therefore it would have been obvious to one of ordinary skill in the art to modify Larrick, Jr. et al. to incorporate determining an amplifier bias of an amplifier in said radio front end to achieve said relative position; accessing a memory table containing a target value for said amplifier bias corresponding to the predetermined frequency; and sending the target value to the amplifier in order to a timing generator that provides highly accurate, stable, low jitter, and agile timing signals in response to a rapidly changing timing command input (Richards et al., col. 2, lines 33-36).

14. Claim 65 is rejected under 35 U.S.C. 103(a) as being unpatentable over Larrick, Jr. et al. (US Patent 6,026,125) in combination with Richards et al. (US Patent 6,304,623) as applied to claim 64 above, in further view of Ross et al. (US Patent 5,337,054).

With regard to claim 65, claim 65 inherits all the limitations of claim 64. Larrick, Jr. et al. in combination with Richards et al. disclose all the limitations of claim 64 above.

However Larrick, Jr. et al. in combination with Richards et al. do not disclose Larrick, Jr. et al. in combination with Richards et al. tracking changes in the predetermined frequency; and adjusting said target value sent to said amplifier.

However Ross et al. disclose as ultra wideband receiver tracking changes in the predetermined frequency; and adjusting the target value sent to said amplifier (col. 7, lines 27-51, col. 8, lines 27-44).

Therefore it would have been obvious to one of ordinary skill in the art to modify the inventions of Larrick, Jr. et al. in combination with Richards et al. to incorporate tracking changes in the predetermined frequency; and adjusting the target value sent to said amplifier in order to detect pulse packets of very short duration microwave energy and establish the proper noise figure and receiver sensitivity levels (Ross et al., col. 1, lines 37-38, col. 2, lines 60-62).

15. Claims 67-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartmann (US Patent 4,577,168) as applied to claim 66, in view of Peckham et al. (US Patent 6,215,359).

(1) With regard to claim 67, claim 67 inherits all the limitations of claim 66. However Hartmann does not disclose the second transmission line includes a variable capacitor, and a voltage source configured to apply voltage to said capacitor.

However Peckham et al. discloses in (Fig. 4, (465,445,482)) the second transmission line includes a variable capacitor, and a voltage source configured to apply voltage to said capacitor (col. 5, lines 24-34).

Therefore it would have been obvious to one of ordinary skill in the art to modify Hartmann to incorporate the second transmission line includes a variable capacitor, and a voltage source configured to apply voltage to said capacitor in order to turn on the diodes and filter out unwanted signals and to control the operation of the matching circuit.

(2) With regard to claim 68, claim 68 inherits all the limitations of claim 67. Peckham et al. further discloses in (Fig. 4, (465,445,482)) wherein the voltage source applies a manually adjustable voltage to said capacitor (col. 5, lines 24-34).

(3) With regard to claim 69, claim 69 inherits all the limitations of claim 67. Peckham et al. further discloses in (Fig. 4, (465,445,482)) wherein the voltage source applies a voltage to the capacitor regulated by a voltage controller (col. 5, lines 24-34).

16. Claims 70 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hartmann (US Patent 4,577,168) in view of MacLellan et al. (US Patent 6,185,418).

With regard to claim 70, Hartmann discloses in output terminal of said network is connected to a terminating load of predetermined impedance, a first transmission line

having a predetermined characteristic impedance matched to a source impedance of a device that provides the incoming signal and configured to convey said incoming signal; a second transmission line having a second characteristic impedance and configured to convey a portion of said incoming signal from said first transmission line for a predetermined distance and reflect said portion of said incoming signal; and a receiving transmission line having third characteristic impedance matched to said terminating load and configured to receive respective portions of said incoming signal from said first transmission line and a reflected portion of said incoming signal from said second transmission line and having as an output said output terminal (col. 4, lines 60-64, col. 5, lines 5-15, col. 6, lines 48-68, col. 7, lines 1-19, col. 8, lines 4-9, 18-50, col. 18, lines 50-59).

However Hartmann does not disclose a bi-phase wavelet demodulator configured to detect data from a signal output from said RFI extraction circuit; and a decoder configured to decode said data from said bi-phase wavelet demodulator so as to produce an output data stream.

However MacLellan et al. discloses in (Fig. 1) a bi-phase wavelet demodulator (106) configured to detect data from a signal output from said RFI extraction circuit; and a decoder (107,108) configured to decode said data from said bi-phase wavelet demodulator so as to produce an output data stream (col. 3,lines 49-50, col. 4, lines 37-44).

Therefore it would have been obvious to one of ordinary skill in the art to modify Hartmann to incorporate a bi-phase wavelet demodulator configured to detect data from

a signal output from said RFI extraction circuit; and a decoder configured to decode said data from said bi-phase wavelet demodulator so as to produce an output data stream so as to produce an output data stream to more efficiently use the available bandwidth of a time-varying RF channel and/or to provide a flexible and adaptive digital communication system.

Allowable Subject Matter

17. Claims 13,16-18,41-44 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cicely Ware whose telephone number is 703-305-8326. The examiner can normally be reached on Monday – Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Cicely Ware

cqw
May 25, 2004

STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600